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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/775,223

02/11/2004

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OKI.643

9990

20987 7590 12/26/2007
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EXAMINER

TRAN, THIENVU V

ART UNIT

PAPER NUMBER

2819

MAIL DATE

DELIVERY MODE

12/26/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/775,223

Applicant(s)

OTSUKA ET AL.

Examiner

Thienvu V. Tran

Art Unit

2819

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 9-15, 17, 20 and 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7, 16, 21-23, 27, 28 and 30 is/are rejected.
- 7) ☒ Claim(s) 4-6, 8, 18, 19 and 24-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/11/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/8/2004, 7/5/2005, 10/18/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-3, 7, 16, 21, 23, 27-28, 30** are rejected under 35 U.S.C. 102(a/e) as being anticipated by Tamura et al (U.S. Publication No. 2002/0041193).

With respect to claim 1, Tamura teaches a signal transmission apparatus (fig. 4), comprising:

a signal transmission line (e.g., transmission line) (see fig. 4 below) having a transmitting end (1014) (fig. 4), a receiving end (1015) (fig. 4), and a characteristic impedance (see, for example, paragraph [0009]), including a signal-line element having a resistance-capacitance delay (e.g., the transmission apparatus has a resistance-capacitance delay as shown with various resistive and capacitive components in the figure) (see fig. 4), for transmitting a digital signal input (V_{in}) (fig. 4) at the transmitting end (see fig. 4);

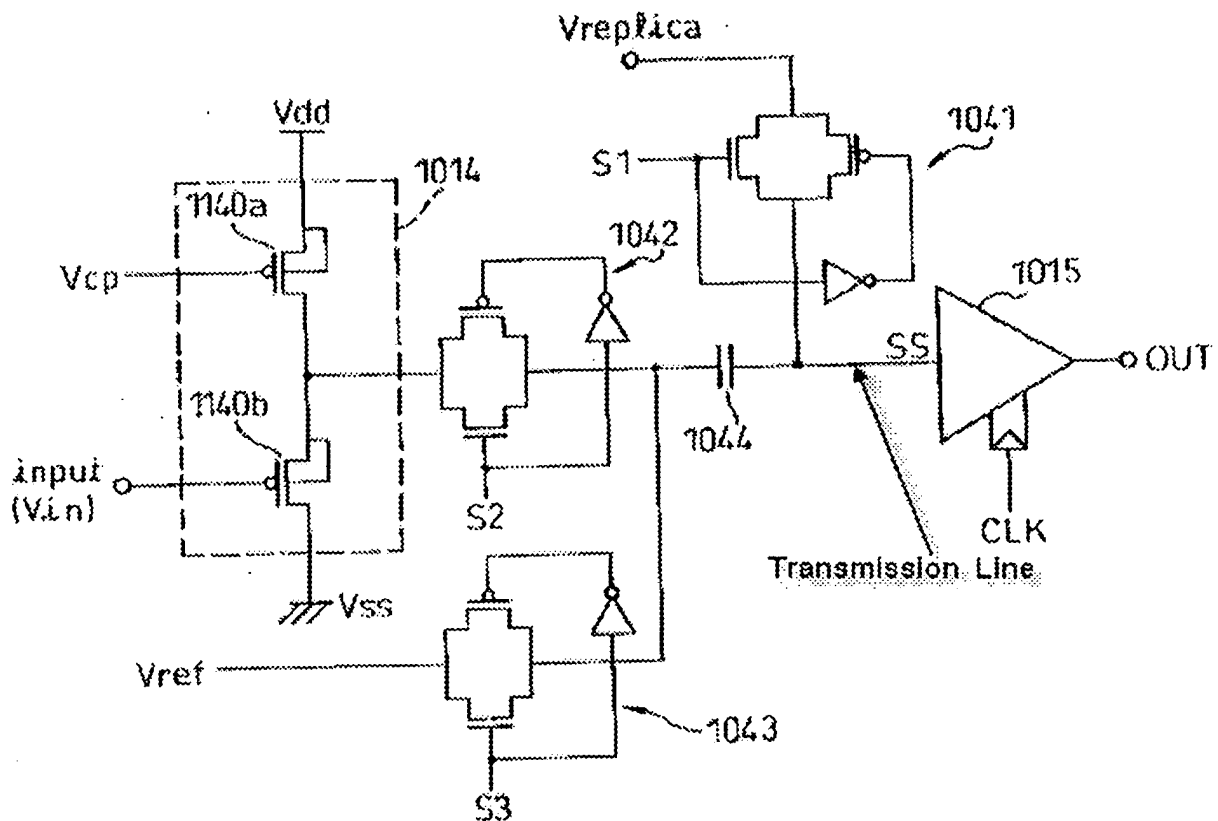
a first driver (1014) (fig. 4) having an inverter structure (e.g., 1014 has an inverter structure) (see fig. 4) and an on-resistance, for supplying the digital signal to the transmitting end of the signal transmission line (see fig. 4);

a power-ground transmission line pair for supplying power to the first driver (e.g., power-ground Vdd and Vss supplying power to the driver 1014) (see fig. 4), having a characteristic impedance low enough to drive a sum of the on-resistance of the first driver and the characteristic impedance of the signal transmission line (see fig. 4);

a first receiver (e.g., decision circuit 1015) (fig. 4) having a differential amplifier structure (see, for example, decision circuit 1005 of fig. 3 showing a detailed version having a differential amplifier structure) (fig. 3, fig. 4), for receiving the digital signal from the receiving end of the signal transmission line and detecting the received digital signal (see fig. 4); and

a first directional coupler (1044) (fig. 4) connected between the first driver and the transmitting end of the signal transmission line (see fig. 4) for blocking a direct-current component of the digital signal and passing a wideband alternating-current component of the digital signal (i.e., the capacitor 1044 blocks dc component and passes ac component) (see fig. 4).

Fig. 4



With respect to claim 2, Tamura teaches wherein all signal-line elements from output interconnections in the first driver to input interconnections in the first receiver, including all signal-line elements in the signal transmission line and all signal-line elements in the first directional coupler, are metallic (i.e., the transmission line and the capacitor plates are inherently made of metal in order for current to conduct) (see fig. 4).

With respect to claim 3, Tamura teaches wherein a transmission line structure is maintained in all signal-line elements from output interconnections in the first driver to

input interconnections in the first receiver, including all signal-line elements in the signal transmission line and all signal-line elements in the first directional coupler (see fig. 4).

With respect to claim 7, Tamura teaches wherein the first directional coupler is connected between the receiving end of the signal transmission line and the first receiver (i.e., the capacitor 1044 is connected between the receiving end and the receiver 1015) (see fig. 4), and no directional coupler is connected between the first driver and the transmitting end of the signal transmission line (i.e., no capacitor is present at the transmitting end) (see fig. 4).

With respect to claim 16, Tamura teaches wherein the first driver includes a p-channel metal-oxide- semiconductor (MOS) transistor and an n-channel MOS transistor connected to form an inverter (see, for example, fig. 4 & fig. 13A).

With respect to claim 21, Tamura teaches wherein the characteristic impedance of the signal transmission line is uniform from the transmitting end-to the receiving end (see, for example, paragraph [0009]).

With respect to claim 23, Tamura teaches wherein the signal transmission line is a stacked-pair transmission line (see, for example, figure 3 which teaches the transmission line is a stacked-pair transmission line) (see fig. 3, fig. 4).

With respect to claim 27, Tamura teaches wherein the first driver, the signal transmission line, the first directional coupler, and the first receiver are formed in a single semiconductor chip (see, for example, paragraph [0002]).

With respect to claim 28, Tamura teaches wherein the first driver and the first receiver are formed in different semiconductor chips, and an interconnection structure

including the signal transmission line and the first directional coupler is disposed between the chips (see, for example, paragraph [0002]).

With respect to claim 30, it is rejected for the same reason as stated in claim 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al (U.S. Publication No. 2002/0041193) in view of DiBene (U.S. Publication No. 2002/0063269).

With respect to claim 22, Tamura teaches the limitations of claim 1 above, but does not teach wherein the signal transmission line is disposed in a homogenous dielectric material having a uniform dielectric constant.

However, DiBene teaches having a transmission line disposed in a homogenous dielectric material having uniform dielectric constant is conventional in the art in order to achieve the advantage of reduced signal dispersion down a transmission path (see, for example, paragraph [0022], [0003]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the signal transmission line disposed in a homogenous dielectric material having a uniform dielectric constant in order to have achieved the advantage of reduced signal dispersion down a transmission path.

Allowable Subject Matter

5. **Claims 4-6, 8, 18-19, 24-26** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thienvu V. Tran whose telephone number is (571) 270-1276. The examiner can normally be reached on Monday-Friday (7:30AM-5:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rexford Barnie can be reached on (571) 272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

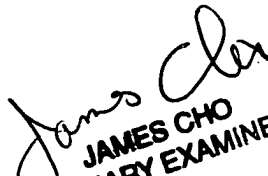
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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T.T/

A handwritten signature in black ink, appearing to be "T.T.", with a stylized flourish at the end.


JAMES CHO
PRIMARY EXAMINER